The Boston Medical and Surgical Journal

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February 26, 1920

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SURGERY OF THE GENITO-URINARY TRACT OBSERVED ABROAD AS CONSULTANT IN UROLOGY, BASE SECTION 2, FRANCE.

By **Richard F. O'Neil, M.D., Boston,**

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(Formerly Major M. C., U. S. A.)

In this presentation I shall not attempt to do more than to give general impressions, personal experiences, and to report, more or less in detail, some of the cases seen of which I made notes at the time. As Chief of the Urological Service and Assistant to the Chief of the Surgical Service in Base Hospital 6, and later as Consultant in Urology to Base Section 2, I had an excellent opportunity to observe a large number of wounded.

Base Hospital 6 went abroad in July, 1917, and was ordered to take over a large French hospital near the city of Bordeaux. The transfer was effected about September first of that year. During the months that followed many additions and improvements were made and much new construction undertaken and pushed as rapidly as possible and completed none too soon for the rush which began in the following spring and continued until after the Armistice.

The hospital rapidly expanded from a few hundred beds to about 4,500 in that time. More than 30,000 patients were cared for. Of this there were 23,000 battle casualties.

The Surgical Division handled about 21,000 patients; in this are included a small number in proportion of cases of acute civil surgery, as acute appendicitis, operations for empyema, traumatisms, etc. The remainder of the battle casualties were made of gassed cases. As urologist to the hospital I had charge of all the urological cases. These included diseases and injuries of a civil as well as of a military nature.

Of the former it may be well to state here, that no cases of uncomplicated venereal disease were admitted to base hospitals, they being treated in regimental infirmaries, camp hospitals and venereal camps. Of the complications a large number of cases of gonorrheal epididymitis were treated almost invariably by operation with uniformly good results. A few cases of epididymitis occurring with spinal meningitis were observed. Gonorrheal arthritis was treated in conjunction with the orthopedic department. Some of these arthritic cases were very severe. I recall two or three very bad infections of the knee joint which did remarkably well after simple aspirations of the joint with a large trocar and irrigated with hot sterile water.

Some of the chancroidal lesions were really terrific and required hospitalization. In some cases there was entire destruction of the glands penis, in some partial destruction of the shaft, and in others extensive involvement of the inguinal and suprapubic regions.

Stricture of the urethra, retention of urine, severe prostatitis, prostatic abscess, and other suppurations were met with and treated by the ordinary surgical methods.

A number of severe traumatisms of the genito-urinary tract were seen, including a rupture of the kidney, which made a good recovery without operation. Several cases of rupture of the urethra, severe blows in the perineum, fractures of the pelvis, etc. A number of cystoscopic examinations were made for the Medical Department for various lesions. Cases of lithiasis and renal and genital tuberculosis were referred to the Disability Board for duty in the S. O. S. or return to the United States. Some of the first received operative treatment.

It may be stated that in the Army, the specialties of syphilis and dermatology were included under the Department of Urology. In our hospital all such cases were most ably taken care of by Doctor, then Major, E. L. Oliver, of Boston.

In June, 1918, I as appointed Consultant in Urology for Base Section 2, my work being outlined as follows: "In addition to other duties, to make visits to the various base hospitals and camp infirmaries in this section for the purpose of seeing cases of war and civil injuries of a urological nature."

There were several other base hospitals in Section 2, including the large hospital centre at Beau Desert of about 10,000 beds, as well as a number of camp infirmaries. This gave me the opportunity to see a number of interesting cases and to have such as I might think advisable transferred to my own service at Base Hospital 6.

I should like to take this opportunity to express my appreciation and thanks to the Commanding Officers and Ward Surgeons with whom I came in contact at the various hospitals and infirmaries for their courtesy and coöperation.

Because of the pressure and stress of work in the Surgical Department in the spring and summer of 1918, I had a good deal of general surgery in addition to the strictly urological work, at one time having 220 beds.

I had one ward, however, in which all wounds of the genito-urinary tract were segregated as far as possible. These were distinct from the venereal complications which were treated in the venereal ward.

This ward was the nucleus of what undoubtedly, later, would have developed into a "Center" in this area for wounds of the genito-urinary tract, had the war continued. It being the plan of the Urological Department of the Army to collect all such cases in various "Centers" as early as possible under the care of a genito-urinary surgeon with the necessary equipment and specially trained nurses and orderlies so essential for this type of work.

In a recent paper by Dr. A. R. Stevens* of New York, he calls attention to the relatively small numbers of wounds of the genito-urinary tract observed in base hospitals abroad. His experience is entirely borne out by my own.

I regret that I am unable to give any definite figures or percentage of the number of cases of this type in our hospital, nor do I know whether any such are available at present. Statistics went by the board during the rush. Patients were evacuated from the hospital for return to the United States or to other hospitals and convalescence camps when they were able to go, with great rapidity, to make room for new arrivals, and the numbers were lost sight of.

This much I can state, that the genito-urinary war wounds were relatively few in number. This is particularly true of the wounds of the upper tract. Wounds of the bladder and the urethra were more common, as a rule very severe, prone to complications and requiring much care. And in a number of cases the end result was unsatisfactory, distressing, and disabling from urinary fistulae, stricture, permanent perineal urethra, etc., requiring continual treatment or further surgical intervention. This is particularly true of wounds of the perineum with fracture of the pelvis and injury to the urethra. I saw a number of such cases.

Wounds of the external genitals were, I should think, more frequently met with. I shall speak of them later.

In my observation, wounds of the genito-urinary tract rarely occurred alone, being nearly always associated with other wounds. They fell roughly into two classes, the distinction being one of degree only.

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* Journal of the American Medical Association, Vol. lxxii, No. 22, p. 1589.

In one class there were multiple wounds from a number of shell fragments, some portion of the genito-urinary tract being involved in the general damage. Such cases were very severe and the mortality very high.

The following case will serve as sufficient to illustrate this type:

J. S., Pvt. Co. B, 344 M. G. Bat. Gun shot wound,* multiple, severe. Received in action October 15, 1918. Head, penetrating; right forearm, penetrating; right thigh, penetrating; genitals lacerated. Entered Base Hospital 6 November 1, 1918. Seen in consultation with ward surgeon. Transferred to Urological Service.

Examination: (1) Gun shot wound, head; wound, mid-occipital region, two inches long; infected; sutures cutting; bare bone but no fracture. (2) Gun shot wound, right forearm. Circular amputation, junction middle and lower third. Wound clean and granulating. (3) Gun shot wound, right thigh; large "debridement." Wound 12 inches by 3. Anterior aspect right thigh clean and granulating. (4) Gun shot wound lacerated, genitals. Shaft of penis and skin of anterior surface of scrotum gangrenous and sloughing. Both testicles exposed but apparently uninjured. (5) Operation wound. Suprapubic cystotomy. Suprapubic tube.

The suprapubic tube was not draining satisfactorily and the dressings were urine soaked. A large catheter was put in its place, which drained well and kept him perfectly dry. The genital and other wounds improved a good deal under careful dressings, nothing further being attempted or indicated.

This man suffered greatly, exhibited unlimited grit and put up a good fight, but the general condition was poor and he died seventeen days after entrance, from exhaustion and septic absorption. There was a terminal broncho-pneumonia.

In the other type some one organ as the kidney, bladder or urethra was injured by a single fragment or a through and through perforation by a machine gun bullet. These were almost always accompanied by a perforating wound of the hip, buttocks, or thigh.

It is to be remembered that I am speaking of conditions in base hospitals and that all these patients, or practically all, had received their first operative treatment elsewhere, so that any discussion of the immediate treatment of such wounds is out of place here. I shall confine myself to reporting the cases as they came to us or were seen in consultation at other hospitals, anywhere from thirty hours to several weeks after being wounded or having their first "debridement."

Wounds of the Kidney. These were very few in number. I, personally, know of but three that were in our hospital. One of these, while not a battle casualty, presents certain points of interest which warrant its being reported.

It can be easily understood that a severe wound of the kidney would cause death from hemorrhage before any surgical aid could be given. This, undoubtedly, accounts in a large part for the rarity of these cases not only in the base, but in the evacuation hospitals as well, which has been the experience of a number of surgeons I have talked with who had served many months in front line hospitals. Stevens has quoted some groups of statistics which show injury to the kidney in from 4 to 9% of all perforating abdominal wounds.

It may be of interest to note here that perforating abdominal wounds were likewise very uncommon in our hospital. I recall only a few.

Of the three kidney cases, one patient showed a clean, partially sutured wound in the left loin. The "Field Card" stated there had been an injury to the lower pole of the left kidney. There were no symptoms, the urine was negative. He made an uninterrupted recovery.

In the second there had been an injury to the spine and a nephrectomy for hemorrhage. Brief extracts from the Field Card are as follows:

"R. H., Sergt. Co. F, 355 Inf. Gun shot wound, back (left kidney). Received in action October 21st. Evacuation Hospital 10: Through and through wound, back; wound of entrance, left, post axillary line; wound of exit, right, post axillary line. Urinary retention, catheter showed blood in urine.

"Base Hospital 15: 'During night of October 27, severe hemorrhage into bladder. Patient became pulseless. Salt solution infusion. Cystoscopy showed bleeding from left kidney. Left lumbar nephrectomy, suprapubic drainage of bladder.'

"December 15, 1918. Base Hospital 6: Seen in consultation with ward surgeon. Gun shot wound, back, perforating left post axillary line to right, back. Nephrectomy wound, left loin. Suprapubic wound. Bed sore. Paralysis below waist line. Bladder satisfactorily drained by putting large catheter in place of suprapubic tube.

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* This term used to describe all such whether shell fragments or machine gun bullet.

This case was of interest in that the severe hemorrhage from the kidney occurred a week after being wounded. It is also interesting to note that the paralysis was improving while he was waiting for evacuation to the United States. He was able to move his legs and had rectal control. He was still in the hospital when I left, February 14, 1919.

The third case was treated throughout in Base Hospital 6.

R. S., Pvt. Bat. D, 17 F. A. Gun shot wound, perforating, left upper arm. Gun shot wound, perforating, left chest to left back. Brought to Base Hospital 6 November 8, 1918, at 10 P.M. History of having been shot by an M. P. three hours before, while resisting arrest.

Examination: Gun shot wound, perforating left upper arm. External aspect, no fracture. Gun shot wound, chest. Wound of entrance, left axillary line, between seventh and eighth ribs. Wound of exit, to left of spine, level of third and fourth lumbar vertebrae. Condition good. Wounds cleaned. No evidence of intra-abdominal injury.

Slight hematuria for the next two days.

November 24 (sixteen days after being shot). Seen in consultation with ward surgeon for recurrence of hematuria. Urine dark, with clots. Abdomen negative. Flanks negative. Wounds healed with dry scabs. Pulse 84. Condition good. Observation. Transferred to Urological Service.

November 26. In late afternoon patient had a retention of urine from clots. Taken to operating room. Clots washed out of bladder through a large evacuating tube. Condition good. Color good. Pulse normal.

November 27. Cystoscopy after washing out some old clots showed slightly blood tinged efflux from left ureter, urine from right kidney slightly cloudy. Sediment showed a little pus microscopically. No. 6 ureter catheter was tight. No. 5 passed.

December 2. Condition good. Some pain in loin. Temperature 99.4.

December 7 (30 days after injury). No symptoms until suddenly at 7 P.M. urgent desire to micturate. Passed two urinals full of fresh blood. Bladder distended, unable to void more. Patient blanched. Pulse 110. Taken at once to operating room. Ether. Left lumbar nephrectomy. (Maj. O'Neil—Lieut. Clark.) Fat capsule thickened. Kidney very adherent. Some broken down material at lower pole of kidney. (Beginning perirenal abscess ?) Considerable bleeding during operation. Wound sutured with drain. 16 ounces of salt solution given intravenously. Blood typed. Found to be Group 4. Donor found. 500 cc. of citrated blood transfused by Major Lineback. Much clot washed from bladder. Condition after operation, fair. A. T. S. 1500 units.

December 8. Urine clear. Condition good.

December 11. Wick removed. Temperature normal.

Convalescence uneventful.

It is interesting to note that the severe hemorrhage occurred 30 days after the injury. The kidney showed a large through and through perforation opening into the lower calyx with considerable destruction of the lower pole. There was infection with the subsequent erosion of a good sized blood vessel.

No wounds of the ureter were observed.

Wounds of the Bladder. According to the statistics before quoted bladder injuries occur in from four to seven per cent. of all perforating abdominal wounds. I will give brief notes on three cases, all of which were associated with wounds of the buttocks.

R. E. F., Corp. Co. G, 137 Inf. Gun shot wound, perforating, machine gun bullet, lower abdomen to right buttock. Injury to bladder. Received in action September 29, 1918. Seen in consultation at Base Hospital 114. Entered Base Hospital 114 October 8, 1918. No primary operation. Wound of entrance just above symphysis pubis leaking urine. Wound of exit, right buttock. No fracture of pelvis. Constant drainage catheter. Sprapubic sinus closed in two weeks. Good control of urine. No obstruction in urethra.

Another case:

M. J. D., Sergt. Co. E, 139 Inf. Gun shot wound, perforating, machine gun bullet, lower abdomen to left buttock. Perforation of bladder and rectum. Received in action September 27, 1919. "Debridement," suprapubic drainage of bladder. Entered Base Hospital 6 October 11, 1918. Seen in consultation with ward surgeon. Transferred to Urological Service. Granulating wound in suprapubic region, leaking urine. Wound in left buttock which discharges gas and feces. Put on constant urethral drainage. Suprapubic sinus closed in two weeks. Abdominal wound healed promptly. From time to time foul smelling discharge from sinus in buttock, which is becoming much less. X-ray negative for F. B. Transfer to United States.

The third case, a perforating wound of the buttock and bladder, had a hematuria. Cystoscopy showed a healing wound above and to the outside of the right ureter.

Wounds of the Spermatic Cord. I observed only one such and the following case is reported for that reason:

P. H., Pvt. H. 2 Co., 104 Inf. Gun shot wound, perforating, right buttock to right groin. Received in action October 29, 1918, 9 P.M. Operation "debridement" same night. Entered Base Hospital 6 November 1, 1918. November 19 seen in consultation with ward surgeon for swelling of scrotum. Transferred to Urological Service.

Examination: Wound of entrance, right buttock; wound of exit, right groin; both infected. Right spermatic cord thickened. Right side of scrotum enlarged and fluctuant. Patient running high irregular temperature. Diagnosis: Wound of cord, secondary abscess of scrotum. Incised, local anesthesia, much pus evacuated. Testicle covered with slough but was left.

December 3. Wound of groin and scrotum healed. Some induration in buttock.

December 6. Secondary abscess of buttock opened, connected by through and through drain with original buttock wound.

Convalescence slow.

Wounds of the Perineum Involving the Urethra. These were, as a rule, severe and troublesome cases, often complicated by fracture of the rami of the pelvis and almost invariably accompanied by perforating wounds of the thigh, buttocks or groin. It is in this type of case that one meets with the disastrous end results already referred to, of fistulae, lack of urinary control, and permanent perineal urethrae. I have selected the following cases as examples:

Notes from "Field Card."

E. G., Pvt. Co. E, 39 Inf. Gun shot wound, perforating, suprapubic and perineum. Injury to urethra. Gun shot wound, penetrating, inner aspect both thighs. Gun shot wound, penetrating left ankle. G. S. fracture symphysis pubis. Received in action August 5.

August 6. "Debridement." Suprapubic cystotomy. External urethrotomy, attempted reconstruction of urethra.

August 14. Suprapubic tube out.

August 18. All urine through perineal tube.

Entered Base Hospital 6 August 21, Urological Service. Examination: Small suprapubic wound discharging small amount of serum. Large, granulating perineal wound with drainage tube to bladder. Granulating wound inner aspect both thighs, and granulating wound left ankle. Nothing could be passed through urethra. All instruments came up against a solid obstruction.

September 21. All wounds clean and healing. All urine by perineum. Had control.

Transferred to Base Hospital 8 for evacuation to United States.

Fracture of pelvis.

In the next bed, at the same time, was an almost similar case, except that he had in addition a wound of the penis, resulting in the loss of the left corpus cavernosum and a wound of the scrotum, involving the loss of the left testicle. He entered Base Hospital 6, Urological Service, the same day as the former case, and was evacuated to Base Hospital 8 the same day. "All urine by perineum. Had control."

In the two following very similar cases there was a much happier result:

G. P. R., Pvt. Co. G, 58th Inf. Gun shot wound, perforating, left hip to right buttock. Machine gun bullet. Injury to the urethra; urinary fistula left hip. Fracture of pelvis. Received in action July 18, 1918. July 19, "debridement" of wounds. Entered Base Hospital 6 July 29, Urological Service. Examination: Granulating wound left hip. Leaking urine. Granulating wound right buttock. X-ray showed fracture descending ramus of right ischium. After a good deal of patience, a silver catheter was passed into the bladder. This was followed by a soft rubber catheter with a stylet, put on constant drainage.

September 21. Catheter has been out for 10 days. No leaking from sinus in left hip since catheter was introduced. Has good control. Wounds clean and healing. Transferred to Base Hospital 8 for evacuation to United States. Fracture of pelvis.

F. N., 2nd Lieut. 113 Inf. Seen in consultation, Base Hospital 114, on October 31, 1918. Gun shot wound, penetrating; machine gun bullet. Inner aspect right thigh, abrasion right scrotum traversing perineum. Exit, left groin. Urinary fistulae perineum and left groin. Some urine passed through urethra. Operation: "Debridement," October 16, 1918. Put on constant urethral drainage four days later. Catheter in place for five days. No leaking since. None today. Passed eight ounces. Good control. Wounds clean and granulating. To have dilatation with sounds.

The result obtained in the following case was of a good deal of satisfaction to me as it was an unpromising looking proposition, there being a urinary fistula of the left groin.

Notes from "Field Card."

J. E., Pvt. Co. I, 26 Inf. Gun shot wound, perforating, laceration of left side of scrotum. Injury to urethra. Gun shot wound, penetrating, right thigh. Received in action October 9, 1918.

October 10. Operation: "Debridement" of wounds. Removal of left testicle. (Urethra has been sutured over a catheter. This was done through the lateral wound of the scrotum.) Bullet removed from right thigh. Transferred from Base Hospital 114 to Base Hospital 6. Urological Service November 12, 1918. Examination: General condition poor, color poor. Normal temperature. Left testicle absent. Irregular granulating wound left groin extending to left scrotal fold through which all urine runs. Granulating wound inner aspect right thigh and right buttock. Back ulcerated. Nothing could be passed into bladder, all instruments held up about four inches from meatus. He stated the catheter came out a short time after operation and all attempts to get it back failed. He was continually wet, having no control. Incontinence of retention. The dressings were changed almost continuously and much credit is due to the nurse who practically "specialed" him. After a week the condition of the skin and back had improved greatly and I decided to explore him.

November 18 (40 days after injury). Ether. A filliform passed into the sinus in the groin apparently entered the bladder. An incision was then made in the perineum and the urethra found to have been drawn high up to the left by cicatrical contraction, sharply angulated with an opening at the apex. The urethra was entirely freed, the strictured area resected longitudinally and sutured transversly over a catheter passed through the urethra into the bladder. A. T. S. 1500 units. The catheter drained well, the sinus ceased to leak. The improvement in the general condition was marked and immediate. The catheter was kept in place for two or three weeks, requiring frequent changing as there was a marked tendency to incrustation. During convalescence he had two attacks of pyelitis with high temperature and tenderness, first over the right, then over the left kidney. The catheter was replaced during these attacks. The last note states he was up and about, had good control. He had been having dilatation with sounds up to 23 French at intervals. The urine was slightly cloudy, albumin trace. The general condition much improved. Other wound healing slowly. To be transferred to the United States.

Two other cases in this class are as follows:

The first is of interest as it did not seem possible that so favorable a result could occur. The patient had a very large "debrided" wound of the perineum involving the anus, from which urine and feces were being constantly discharged. He was seen in consultation with the ward surgeon October 17, 1918, but remained on the General Surgical Service. A catheter was fastened to the urethra for ten days, after which time there was no urinary leaking. Discharged to the United States on December 8, 1918. Wound not healed. Some incontinence of feces.

The second case was also a satisfactory one. Seen in consultation Base Hospital 114, October 2, 1918:

A. C., Bugler Co. I, 11th Inf. Gun shot wound, perforating, right scrotum and urethra. Received in action September 12, 1918. Operation, "debridement." Removal of right testicle, and suprapubic drainage. Patient had been etherized a few days before I saw him at Base Hospital 114 and put on constant urethral drainage. Catheter came out and could not be put back.

Examination: Suprapubic wound dirty and incrustated. Some infection of pre-vesical space. Some leaking about suprapubic tube. Granulating wound, right side of scrotum close to fold of groin, leaking urine. Nothing could be passed into bladder by urethra. Catheter on stylet passed through suprapubic wound into internal meatus. Catheter pushed down on stylet and appeared at external meatus, another catheter sewed to it and pulled down into bladder. Put on constant drainage. Both wounds ceased to leak.

October 20. Discharged to the United States. "Wounds not healed. No leaking. Good control. Some frequency. Bladder capacity fair. Fracture right ramus of pelvis."

I could cite other cases but these are sufficient illustration of this type.

Wounds of the External Genitals. It will be observed in some of the foregoing cases that wounds of the scrotal contents requiring the removal of one or both testicles were met with in connection with other wounds of the thigh, etc. Also at times plastic operations were necessary to cover in skin defects in the scrotum. These cases belong rather to the general than to the urological surgeon.

Wounds of the Penis. A few wounds of the penile urethra were seen, accompanying through and through wounds of the thigh:

J. S., Pvt. Co. D, 307 Inf. Seen in consultation Base Hospital 114 October 31, 1918. Gun shot wound, perforating, penis and left scrotum. Gun shot wound, perforating, left thigh. Received in action September 14, 1918. Base Hospital 114, September 24, 1918. "No urine from meatus. Came through fistulae in penis, one on dorsum, the other to left of fraenum.

Examination: October 31, through and through wound of penis. Wound on dorsum healed. Wound to left of fraenum leaking. Urethra closing down. To have dilatation, urethrotomy if necessary.

Note: Two weeks later urethra had been dilated. Wound healed.

A similar case from Base Hospital 6:

W. L. B., Corp. H.Q. Co., 167 Inf. Gun shot wound, perforating, machine gun bullet, penis, left scrotum and left thigh. Received in action September 26, 1918. Base Hospital 6, October 12, 1918. Examination: Through and through wound of penis, perforating urethra. Entrance dorsal surface back of coronal sulcus. Exit left of fraenum. Wound of scrotum. Left testicle absent. Wound inner aspect left thigh. Urine leaked from both wounds in penis.

November 20. Wounds of penis healing. No leaking. No stricture. Has been having dilatation. Transferred to the United States because of contraction of wound of thigh.

These cases will require intermittent dilatation the same as any traumatic stricture.

I saw one other case where there was a through and through machine gun bullet perforation of the penis which did not involve the urethra.

The following case differs from the others, requiring operative closure of the fistula. The result was perfect.

E. D. J., Pvt. M. G. Bat., 26th Inf. Gun shot wound, right arm, perforating; penis, perforating; scrotum, lacerating; right foot, perforating. Received in action October 7, 1918. Operation, "debridement" of wounds. Base Hospital 6, October 17. Seen in consultation with ward surgeon. Transferred to Urological Service. Examination: Gun shot wounds forearm and dorsum right foot clean, nearly healed. Gun shot wound of penis, perforating. Wound of entrance through preputial opening penetrating prepuce at sulcus to left of fraenum. Exit shaft of penis, about middle. Skin has been "debrided" from under surface of shaft of penis for about two inches from the base and from anterior surface of scrotum. There is an opening in the floor of the penile urethra at its middle about half an inch long, through which all urine passes.

November 1. Culture from wound of penis showed no gas bacilli or streptococci. Ether. Plastic operation for closure of urethral fistula and repair of skin defect, penis and scrotum. Bladder drained by catheter through small perineal wound.

November 10. Catheter out. Wound healed by first intention. No leaking.

November 16. Transferred to the United States because of wound in foot.

The mortality of the genito-urinary wounds is generally conceded to be high. That is undoubtedly true for reasons before stated, and accounts for the small number reaching hospitals. The mortality in Base Hospital 6 was *nil*, except in cases of multiple severe injuries, and the results were, I think, as good as could have been expected.

I had no opportunity to try the *laissez faire* treatment in retention of urine due to paralysis in wounds of the spinal cord which is advocated by British surgeons. What cases I saw had been already subjected to suprapubic cystotomy or constant urethral drainage.

Such, in brief, were some of my observations and experiences with war surgery of the genito-urinary tract abroad.

But I think one of the most vivid impressions that remains is the cheerful courage and philosophy with which the doughboy "took his medicine." And this applies strongly to the class of cases just reported.

We had good material, mentally and physically, to work on.

In conclusion, I apologize for this sketchy and unscientific presentation.

THE MENTAL FACTOR IN THE CHRONIC INTESTINAL INVALID.*

BY JOHN BRYANT, M.D., BOSTON.

At the last annual meeting of this Association, Dr. Jacob Kaufmann gave a most instructive short paper on the "Psychic Element As An Important Factor in the Development and Treatment of Peptic Ulcer." He stated that "as a rule we are dealing here with high-strung, excitable individuals who are prone to indulge in over-activity." He referred to the fact that "the intimate connection between the mental status and digestive activity and its disturbances, long known to the laity as well as to medical observers," had been experimentally demonstrated by many able workers, among whom he mentioned Pawlow and Cannon. Later in his paper, the following paragraph appeared.

"Whatever other medical or surgical treatment may be indicated, according to the condition which the case presents, the final result, especially the prevention of recurrences, depends to a high degree on the possibility of eliminating further periods of display of harmful psychic influences. With this object in view, we must enlighten the patient on his short-comings, we must advise him to avoid emotional excesses and to redress faulty habits of mental activity. This may involve a thoroughly revised mode of living and eventually necessitate a change of occupation."

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*Read in part at the Annual Meeting of the American Gastro-Enterological Association, June 10, 1919.

These remarks of Dr. Kaufmann's were applied to a consideration of treatment of peptic ulcer. They apply no less to many other classes of cases, and especially to the chronic intestinal invalid, with whom the writer has been concerned for the past ten years.

The object of the present paper is to give two case histories which demonstrate the applicability of Dr. Kaufmann's thesis to the chronic intestinal invalid. The term *chronic intestinal invalid* is applied to the individual who is usually in rather poor health from an intestinal point of view. Many of these individuals do not even associate their poor health with intestinal abnormalities, due to the fact that they have very little gastric distress; also, because they have a daily bowel movement, the idea that this movement may be one or more days late in arriving never having been even considered. There is often, on the other hand, a clear history of intestinal trouble dating back to childhood as in Case 1 here reported. Also as in Case 1, which is the third generation to suffer from intestinal trouble, heredity frequently seems evident.

The degree of poor health is very variable. Although many of these chronic intestinal invalids may get along well for months at a time under favorable conditions, excessive fatigue, either mental or physical, almost invariably precipitates a train of symptoms among which intestinal pain, and intermittent diarrhea, or constipation predominate. Accompanying this more purely gastro-intestinal display of symptoms is a condition of bodily exhaustion varying in degree according to the length of time for which the particular patient has been under strain. From the point of view of physical type, the chronic intestinal invalid is usually "high-strung and excitable"; this mentality is usually heralded by a long, thin, often emaciated and carnivorous type of body. The skin is usually pallid or sallow and may be so discolored as to suggest Addison's disease. As the long thin body would lead one to expect, this type of individual often presents a textbook picture of drop-heart and all the other classic features of visceroptosis as usually described. The posture is bad. There may be a drawn anxious facies. The circulation is poor, the blood pressure being often low. The patient often suffers from cold hands and feet, and frequently, accompanying the low blood pressure and the cold hands and feet, there is a disagreeable mottled purplish color of the hands and feet which may extend almost to the elbows and knees. Perspiration, not infrequently disagreeable in odor, is often so excessive as to suggest hyperthyroidism; the palms and the soles of the hands and feet are in these persons not only cold, but clammy. As a whole, although the brain may be hyperactive, the body usually has physical inefficiency written all over it, even in the absence of demonstrable organic lesions.

The two cases about to be described were seen recently while in the Army. One is a nurse, and one is the wife of a higher Army officer. It is only accidental that both of these recent cases are of the same sex. There are many men who fall into this category of the chronic intestinal invalid, as anyone who has had gastro-intestinal practice can testify.

Case 1. Mrs. G.P.A., white, officer's wife, aged 56, entered Walter Reed General Hospital December 6, 1918.

F. H. Father died of bowel trouble at the age of 33, after an illness of three or four years, during which time he was unable to work. The paternal grandfather is said to have had the same sort of trouble, and to have died of it suddenly. Mother's family all well.

P. H. First began having trouble when six years old. Sharp attacks of pain and diarrhea about two or three times yearly, lasting from two to three days. In intervals, fairly healthy. At 16-17 years of age the attacks became more frequent and "colds would settle in the bowels." Menstrual history began at the age of 15, very stormy, always great pain, in bed for 24 hours, quantity slight; gradual improvement after thirty years of age. Patient was married at 28, but had no children; this was attributed to a runaway accident and the severe nervous state which followed. Underwent several operations for sterility but without effect. At 32 was operated upon in New York for "ulcers of the rectum" and the ulcers were burned. This relieved for a time the severe and more or less constant rectal pain. This operation occurred while the patient was in hospital for displacement of the uterus.

The abdominal pain, either general or in the right lower quadrant, gradually became worse. Five years ago, patient had an interval appendix removed. Has been more free of localized pain since, but there has been no improvement in the general abdominal pain associated with dysenteric spells. These have come six or eight times a year, lasting several days to two weeks, at which time patient always gets very weak and has bearing down pains. The rectal pain is occasionally severe enough to require morphine. Patient sleeps poorly, often remaining awake after two or three o'clock in the morning. Appetite is good, but is afraid to eat on account of bowel condition. She has avoided coarse or rough foods but has otherwise used a general diet with care. For the past six months since conditions have been worse, has lived on eggs, toast, rice and broth, as other foods seemed to aggravate her trouble. The bowels have moved at least four times daily, the movements being ropy and frequently containing mucus. When she is worse the movements are watery with much mucus. Patient lived for fifteen years in the Philippines, returning three years ago. While in the Philippines, about seven years ago, she was known to have been suffering from amoebic dysentery. This is proved to have been cured.

P. I. At the time of admission to the hospital, December 5, 1918, patient was having from 8 to 15 movements daily, associated with gas, watery material and mucus; also complaining of more or less constant pain in rectum, especially at night. Patient entered hospital determined that she must undergo a serious intestinal operation of some sort for relief of her present condition, her feeling being that anything would be preferable to her then constant state of misery and inability to carry on her normal daily life at home.

P. E. In general, negative, except that patient is very thin. Abdomen generally tympanitic with general soreness but no local tenderness. Skin dry, discolored.

Patient first seen by writer on December 21, 1918. Abstract of notes follows.

December 30. Has been on a special diet, omitting all eggs, meat and fish, for past five days. In general, improved. Less bowel frequency, less pain and rectal tenesmus, also less gas. Yesterday there was a slight food upset, but patient is better today.

January 4. Steady improvement. Now has no abdominal discomfort and little gas. Sleeps much better. Appetite satisfactory. Bowels have moved only once daily for the past forty-eight hours instead of nine or ten times daily. Feels stronger and much more cheerful. Given exercises to enlarge lower thorax, also general developmental exercises. Given massage daily.

January 7. Feels well, good appetite, sleeps well, bowels regular once daily, normal in quantity and appearance, walking about, desires to go home.

January 24, 1919. Discharged to go home, improved.

This patient when first seen stated emphatically that it was impossible for her to eat ordinary vegetables. Within two weeks of the time of alteration of diet, she was eating everything allowed on her prescribed diet, which eliminated, practically speaking, only eggs, meat and fish.

At the time of my first conversation with the patient, she understood me to say that because I did not wish her operated upon, her case was hopeless. It took several days to disabuse her of this idea, so firmly fixed had it been in her mind that she must be operated upon in order to obtain any relief from her sad condition.

Two weeks after being first seen, patient said the change produced in two weeks "is so great it seems as though a miracle had been performed." She expressed profound and almost embarrassing gratitude.

She responded in general very readily to mental or nervous treatment. This is shown by an incident which happened on the day when it was first attempted to give her some exercises which would tend to enlarge her lower thorax. After three or four long breaths she suddenly complained of terrific pain over the whole lower thorax, especially in the epigastrium. This was associated with a semi-hysterical spasticity of the fingers. The mechanism of this finger "tightness" from which she had suffered for years was explained to her. It disappeared almost before the explanation was completed, and it never returned. The epigastric pain, following exercises, persisted violently for twenty-four hours. Exercise was resumed after forty-eight hours without further incident, and at the time of leaving the hospital, patient's posture had already become much improved.

About six months after returning home, this patient informed me that for the first time for years, she had known what it was to be able for weeks at a time to run up and down stairs at will, practically without fatigue, and free from her long-standing intestinal ailment.

Several months after her leaving the hospital, she suffered from an acute food upset. She was able, however, to overcome this herself by a strict application of the dietary system which she had been taught, and at last accounts she was back again at her daily work feeling "better than for many years."

Summary, Case I.

1. An emaciated elderly woman who had suffered from recurrent intestinal attacks since childhood, entered hospital seeking operation in a spirit of desperation at her state of chronic invalidism as evidenced by extreme rectal tenesmus, abdominal pain, and more or less chronic dysentery to the extent of 8 to 15 dejections daily. She sought relief from a condition summed up by her as "hopeless invalidism" in which she was a burden to herself and to her husband.

2. Treatment: Diet, exercise, advice, massage.

3. Results:

a. After fourteen days, bowels moving once daily, practically no gas, no abdominal discomfort, no rectal tenesmus, mental state more placid.

b. After one month, eager to go home, discharged from hospital. Able to do her own housework and carry on the daily routine of her life without undue fatigue.

c. After six months, no relapse.

Case 2. Miss E. V. N., nurse, white, aged 24, on duty at the Walter Reed General Hospital, was admitted as a patient on April 24, 1918.

F. H. Negative except that the patient was one of a large family and for some years had felt the necessity of earning her own living.

P. H. The only childhood complaint remembered was diphtheria. The patient was operated upon for appendicitis when nineteen years of age, at which time a dermoid cyst of the right ovary was also removed. The following year, patient for several weeks suffered from severe headache, nausea, and vomiting; she had to go to bed on account of severe darting pains in the hepatic region, and then remained off duty for ten weeks on account of constant dull pain following the acute pain just mentioned. This radiated backward to the side and up toward the right scapula. Two years ago patient was operated upon for correction of abnormal nasal septum and turbinated bones. In the same year, while nursing a case of delirium tremens, she was kicked in the back and at this time a kidney is said to have been torn loose. The patient wore a binder for one year, and has not been troubled by kidney pain since.

P. I. In January and February of the present year, patient was in the Walter Reed Hospital suffering from meningitis contracted while on duty. She recovered well and soon went back on duty. She felt well enough until April tenth, when she became nauseated and vomited. Her temperature varied between 100-102. There was at this time severe cutting pain in the hepatic region. Patient tried to continue on duty. The pain radiated to the side and back as in the attack she had had in 1914; in fact, the symptoms are said to have been very similar to those in the previous attack.

Patient again came on sick report on April 21. At this time the temperature was recorded as 100, pulse 95, respiration 24. The chief complaint was of dull pain in the hepatic region radiating to the side and back, increasing on action, especially on turning in bed. Pain at this time was pulling or tearing when sitting or standing very long. Patient stated upon being admitted that she could not sleep night or day on account of itching all over her body, although there was no sign of skin trouble. There was habitual constipation and the stools were at times "pasty white."

P. E. Patient rather short in stature, well developed, somewhat obese. A very pallid color of the entire skin. Liver slightly enlarged and tender to palpation and percussion. Local tenderness over the gall bladder. Examination otherwise negative.

One month after admission, there had been no improvement in general condition. Patient came under the personal care of the writer on May 24, 1919. Abstract of notes follows:

May 28. Much less gas and pain; no vomiting; sleeps better;

June 9. For three days has had a right mastitis without temperature.

June 15. Is again doing well; marked improvement in developmental exercises.

June 30. General condition better; local pain persists.

July 12. Increase of local pain and increase of mucus in stools; otherwise improved.

July 18. Has had severe menstrual pain and active pain over gall bladder.

July 21. Much improved in every way.

July 28. Slight return of pain in gall bladder region associated with distention of caecum by gas.

July 31. Up and about. Feels much stronger, but frequent loose movements for past forty-eight hours.

August 31. Very slow gradual improvement in bowel condition. Now has no complaint of pain aside from menstrual distress. Oil enema (four ounces being retained at night) being used with apparent good effect. Improvement in general condition and strength slow but continuous. An occasional unexplained rise in temperature to 99-100 lasting one or two days.

September 7. For two weeks has had persistent daily headache, unilateral from eye to occiput on right side; unexplained. No abdominal distress, bowels regular, movements somewhat light colored. Sleeping well, and getting about with constantly less effort. In general, condition satisfactory but patient far from well and can never be fit for Army duty. Would require from three to four months furlough and would then be unable to stand hard work.

September 9. Free from headache today.

September 16. After an interval, remarkably free from intestinal pain of any sort, in which patient was up and about for a week or two dressed, pain in the right lower quadrant reappeared. This was associated with irregular menstruation which persisted only one day, followed by relief of pain. Patient then continued favorably until September fourteenth, when the abdominal pain recurred in the old area, right upper quadrant, just outside of gall bladder area, radiating upward and outward toward the right axilla. Temperature to 101 for three days. White count 7000. Mucus and streaks of blood in stools.

September 17. Pain much less acute and patient quite comfortable though still sore and tender, the pain being more localized to the ascending colon and hepatic flexure region. At noon the pain suddenly became violent, same in character as two or three months ago, requiring morphine gr. ½ for relief.

September 22. Patient yesterday afternoon had a white count of 17,000 and temperature of 101.6, but today temperature is down to 99. Patient still very uncomfortable. Morphine gr. ¼ twice in the night required for pain and lack of sleep. Vomited green liquid several times and has had several spells of hiccough.

September 25. Pain slowly subsiding. Temperature has not been over 100. Very exhausted, marked herpes of lips.

October 1. Much improved but pain persists.

October 5. To have an exploratory laparotomy when influenza epidemic is passed. Patient unable to do any concentrated work, as making gauze masks, without its being followed by an undue nervous exhaustion, tremor and increase of local abdominal pain. This pain follows the course of the ascending and transverse colon.

October 9. Condition unchanged. Slight exertion provokes pain. Fairly comfortable on light diet, flat in bed.

October 15. Has had three days of discomfort associated with nausea. Sharp intestinal pain in gall bladder region associated with mucus in stools. Today fairly comfortable.

October 20. Greatly improved.

October 28. Out of bed for short periods the past three days, the first time in over one month. Much brighter, and more cheerful than for a long time. Today no great tenderness except in a small spot near gall bladder area.

November 1. Steady improvement.

November 8. Better than for weeks past. Almost no local tenderness.

November 10. Transferred for exploratory laparotomy; question of intestinal adhesions, with possible involvement of gall bladder.

November 12. Operation, Major Hill. A band of adhesions found running from the lower ascending colon to the middle third of the transverse colon, involving an hepatic loop of the upper ascending colon. No other abnormality noted. Adhesive bands cut, restoring contour of colon approximately to normal.

(The operation was short and satisfactory, the patient being returned to bed with practically no post-operative sequelae.)

December 10. For four days patient has been up and about after an uncomplicated convalescence.

December 15. Discharged to duty.

These notes have been quoted extensively to show the erratic progress of the case during the approximately six months the patient was under my observation until the time of her operation. It may be said that six months was a long while to wait for operation in a case of this sort. The answer is that no one would take the responsibility for making a diagnosis. For example, an unsuccessful attempt had been made to fasten the whole series of symptoms upon neurasthenia pure and simple. This appeared to me to be nonsense, although the patient was obviously high-strung. Furthermore, in the course of the months that this patient was under control of the writer, it was possible to obtain a very considerable degree of physical development, and largely to increase the mental poise. For weeks previous to the latter half of October, the writer had felt that there was some serious mental commotion going on which would probably come to the surface if allowed adequate time. The patient had previously refused to yield any information to a psychologist.

On October 26, after a two-hour struggle with herself, the patient unbosomed herself of a minor sexual irregularity which although of no great consequence in itself, had seemed very terrible to her, and to which she had looked back with horror ever since early puberty. There was in addition a broken engagement of more recent occurrence. It was possible to get the patient in a perfectly comfortable frame of mind in reference to these two events. The result was startling. The entire nervous mask fell away. In forty-eight hours the patient had become almost placid in temperament. She continued constantly and quietly cheerful throughout the remainder of her stay in the hospital.

Had not the mental factor been eliminated, and had not some degree of physical improvement been obtained, it is very probable that the operation might not have effected a cure. As it was, the operation was in itself rapid and successful, the patient came through with no loss of mental poise, and was soon almost upon her feet again. The word "almost" is used advisedly. Possibly on account of the writer's being at the time away on an inspection trip, the patient was allowed to be placed on active duty while awaiting her discharge from the Army. The discharge was held up, and the amount of duty was not properly regulated. As a result, the patient arrived home in a somewhat exhausted condition. After a month or two of rest, she has, however, been able to take up district nursing, and she has recently written that she is practically free from all gastro-intestinal complaints. Her only cause of present distress is fatigue from physical over-exertion, for, as she says, "Mental worries are a thing of the past."

Summary Case II.

1. A young woman of good physique, exhausted from over-work, suffering from recurrent intestinal attacks accompanied by fever, abdominal pain, and mucus in the stools.
2. Treatment: Diet, exercises, advice, massage, operation.
3. Results:

a. Marked increase of physical and mental poise with relief of mental distress obtained in the six months preceding operation.

b. Operation for adhesions successful.

c. Uninterrupted recovery; discharge from hospital one month after operation.

d. After discharge from the Army, returned home; able to resume district nursing work and to keep it up without return of gastro-intestinal distress.

DISCUSSION.

The above two cases represent two types of mental disturbance which must be taken into account in the treatment of the chronic intestinal invalid. It is presumable that success would not have been obtainable in either of these cases without adequate attention to the mental factor.*

In the first case mentioned, the mental commotion present was due to a summation of all sorts of long-continued incoming stimuli which had greatly worn down the patient's resistance, so that she was in a state of general unstable nervous equilibrium. Equilibrium was restored by a process of general reëducation as well as by removal of the local intestinal irritation.

In the second case, almost the entire nervous commotion present was due to two specific causes. On removal of these two causes of irritation, the patient ceased to be nervous. It is certain that this had much to do with her uneventful recovery from operation.

SUMMARY.

1. Two case histories have been presented, illustrating two distinct types of mental commotion often encountered in the treatment of the chronic intestinal invalid. In one case the mental commotion was due to a summation of general causes. In the other case, the mental commotion was due to two specific factors.

2. In both of the cases above presented, relief of the mental commotion proved a very important factor in the recovery of the patient.

CONCLUSION.

Consideration of the mental factor is a prerequisite for the successful treatment of the chronic intestinal invalid.

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THE SPECIFIC DIAGNOSIS AND TREATMENT OF ACUTE LOBAR PNEUMONIA.*

By Lesley H. Spooner, M.D., Boston.

Since the Hippocratic days of counter-irritants and blood-letting in the treatment of pleuro-pneumonia, no real progress along this line took place until the last decade. The discovery of the *Diplococcus pneumoniae* by Fraenkel led to hopes in the direction of a specific treatment. Further study served only to confuse the situation, since the organism was so frequently demonstrated on the healthy mucous membrane, and, furthermore, necropsy often revealed organisms other than the diplococcus of Fraenkel as the evident etiologic factor of typical pneumonia.

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* Both of these cases were heard from by letter about January 1, 1920. Both patients reported being in good health.

* Read before the Cambridge Medical Improvement Society, December 22, 1919.

One fact remained, however, which has lead gradually to an elucidation of the problem—this organism, though often saprophytic, has been found as the causal factor of acute lobar pneumonia in 85% of cases of the endemic disease.

Dochez and Gillespie,[1] Avery and Dochez,[2] and Cole[3] have shown that although strains of this organism differ slightly morphologically, the group may be divided into four distinct types, according to the action of sera of immunized animals upon varieties of the pneumococcus. The first three types are considered "fixed," since in each instance a specific agglutinin and precipitin can be produced in lower animals which serve to differentiate by biologic reactions Types I, II, and III. Type IV is represented by a more or less heterogeneous collection of organisms which by specific serologic tests do not fall into the first three groups, yet by morphology and bile solubility can be classed with no other organisms.

The methods for determining the types are numerous. That of Blake,[4] which depends upon the susceptibility of the white mouse to the pneumococcus has been most successful in the hands of the writer. The scarcity of that animal, especially during the recent war, led Avery[5] to devise a special culture medium which has served as a substitute for the animal. The more direct method of Krumwiede[6] was found satisfactory in a smaller percentage of cases; that recommended by Loewe, Hirshfeld, and Wallach[7] is deserving of note.

That precipitins may be demonstrated in the urine has been pointed out by many observers. Quigley found such bodies in cases infected with the fixed types in 81%. The appearance of the specific substance does not occur early enough in the disease to warrant the substitution of this for other methods.

In any instance sputum, derived from the lower air passages—when possible the typical sputum of crupous pneumonia—should be collected in any sterile receptacle and delivered without delay to a competent diagnostic laboratory. The diagnosis of fixed types should be made not later than 24 hours after the first consultation. In rare cases where sputum is unobtainable recourse must be had to blood cultures and urine examination.

A review of literature shows the proportion by types as indicated in Table I. The average, based upon the examination of 2980 cases of lobar pneumonia, is of great interest and importance. It will be noted that my figures, based upon 1103 observations do not differ radically from the average in Types I and III. Type II is found less frequently and Type IV more often than by other observers.

Alexander[11] notes a variation in the percentage of types from year to year. In my series, which covered observations in the Laboratory, Base Hospital, Camp Devens, Mass., during 18 months, marked variation in type was found, corresponding to small epidemics. One or more such outbreaks were found in each of the three fixed types during this period, which were of sufficient size to cause a marked variation in monthly percentages.

As a further element which serves to upset this law of averages, the habitat of the individual appears to influence the type of the disease. R. Richardson[18] shows that of 46 rural cases examined 70% presented Type IV, the remaining 30% only being fixed types. Such a marked difference might have influenced my findings, which were based upon a much greater proportion of rural than urban troops.

Park and Chickering,[19] working at Camp Jackson, demonstrated, on the other hand, a much higher percentage of Type I infection among Porto Rico laborers, than among either white or black troops, the difference being an increase almost 70 times over the former and seven over the latter. A similar variation from the average is reported by Mitchell,[20] among infants who showed only 25% infection by fixed types.

During the "influenza epidemic" the type percentage of complicating pneumococcus infection showed considerable variation. Lamb[9] found fixed types in only 25% and Beckler[21] in 47%. During this period at Camp Devens,[22] although the percentage of fixed types was lower than previously found, a sufficient number of Type I cases developed to support the rule that all cases of pneumonia, especially of the lobar type, should receive immediate careful laboratory investigation.

It may be stated, as a summary, that the Type I organism is found in typical acute lobar pneumonia in about 30% of cases. These figures are influenced by the habitat of the individual and the existence of intercurrent disease. A rational explanation of the latter might be that the fixed type disease is produced by contact and Type IV often by autoinfection.

TREATMENT.

A consideration of the general treatment of this disease is not within the scope of this paper. The specific or serologic treatment is alone of interest today, since along these lines the only real progress has been made.

Kyes,[23] Nichols,[15] McClellan,[10] and Camac[13] report favorable results from the use of polyvalent sera. It has been shown by Cole and others[24] that a serum of sufficiently high titre to be of therapeutic value could not be obtained from Type II or III organisms. It is, of course, obvious that no serum can exist to combat the heterogeneous group of organisms comprising Type IV. Thus in only 30% of cases could a polyvalent serum have any specific value. The intravenous administration of such large quantities of serum as are necessary in the treatment of pneumonia is accompanied by more or less severe constitutional reactions, which can be justified only where a specific benefit can be expected.

It would appear that the small percentage of cases in which polyvalent serum can be of service and the relatively large amount of inert sera contained in such a mixture are sufficient contraindications for its use.

Specific treatment of Type I pneumonia by Type I serum is, on the other hand, distinctly indicated.

The following routine, advised by Cole,[24] was employed at the Base Hospital, Camp Devens, Mass. Upon submission to the laboratory of a satisfactory specimen of sputum, every case of acute lobar pneumonia received an intracutaneous injection of 0.02 cc. of horse serum diluted to 1:10 with salt solution. A similar injection of salt solution served as a control. This test to determine sensitization is of great importance. The site of each injection immediately presents a wheal, which soon disappears. Sensitization is indicated by a distinct indurated wheal, surrounded by an area of hyperaemia, which appears after a few moments. The test is considered negative when no reaction is found an hour after injection. To safeguard against accident, even when the latter reaction is negative, it is wise to administer a desensitizing subcutaneous dose of 0.5 to 1 cc. of horse serum, upon completion of the sensitization test. Following this routine procedure it is customary to start the intravenous administration of serum as soon as the diagnosis of the type has been made. Ninety to 100 cc. of serum, diluted with equal parts of sterile salt solution prepared from freshly distilled water, is warmed to body temperature and injected into the median vein under the usual aseptic precautions for intravenous medication. The gravity method is usually employed, although the syringe and three-way stop-cock has given good results at Camp Devens. In either case care should be taken to maintain the temperature of the fluid during its introduction, which should consume at least 20 to 30 minutes. Careful observation of the patient during the administration of the first 10-15 cc. will often obviate serious trouble. At the appearance of cyanosis, pallor or dyspnoea the administration should be discontinued and resumed only on the disappearance of these threatening signs. Treatment should be given at eight-hour intervals until a distinct improvement in the patient's condition is noted.

When the sensitization test is positive or when the patient gives a history of asthma or other vasomotor difficulties, extreme care should be taken in this treatment. In that case Cole recommends the subcutaneous injection of 0.025 cc. of serum. The subsequent doses, given at one-half hour intervals, should be double the previous dose until 1 cc. is reached. At that point 0.1 cc. may be given intravenously and that dose doubled at half-hour intervals. After a total of 25 cc. has been reached in this manner, 50 cc. may be given after a four-hour interval and the regular dose after six to eight hours. The appearance of signs of anaphylaxis should cause the suspension of treatment for two to four hours and ~~the resumption~~ at a dose lower than that which produced the reaction.

REACTION.

There is, unfortunately, no relation between reaction and curative power of the serum. One-half to one hour following the injection the patient is likely to present the so-called thermal reaction, characterized by chill, cyanosis and a distinct elevation of temperature. This is followed in a few hours by a fall in temperature, profuse sweating and relaxation. This apparently precipitated crisis may often be permanent and the subsequent convalescence be uneventful. Often, however, the temperature rises again in four to eight hours and further treatment is indicated. In a certain number of cases symptoms of anaphylaxis may develop very shortly after serum administration. The symptoms are those noted previously as danger signals during the injection. The patient generally presents cyanosis, dyspnoea, and collapse. The immediate subcutaneous injection of 0.6 cc. of 1:1000 adrenalin is generally sufficient to give relief. Although this complication is not common, it is never safe to proceed with the treatment, unless this preparation of adrenalin is at hand.

Serum sickness may and generally does follow in the course of seven to ten days. It varies in severity from occasional urticarial wheals to universal erythema. Arthralgia may be a troublesome complication. The treatment of this condition is symptomatic.

PROGNOSIS.

Cole[25] states that in every 100 cases of lobar pneumonia thirty-five are due to Type I and ten die; thirty are due to Type II and ten die; ten are due to Type III and six die, and twenty-five are due to Type IV and four die. Just as the incidence by types varies according to seasonal and other influences, so apparently does the mortality of the different forms of the disease. Although Type III is admitted to be a very severe form, Cecil[26] reports from Camp Upton a high mortality from both Types II and IV. Alexander points out similar yearly variations in mortality. In the Camp Devens series high mortality existed very frequently in Types II and IV. At one time a small epidemic of Type III cases presented a relatively low mortality. The intercurrence of other disease processes certainly plays an important rôle in prognosis. During the "influenza epidemic" the mortality from pneumonia showing Types I* and II was greatly increased.

Although variations in mortality of the types not treated by specific methods is of general interest, yet that of Type I alone is of importance in this discussion. It is generally admitted that untreated cases of this class present a mortality between 25 and 32%. In a special series studied at Camp Devens[22] during the influenza epidemic we found a mortality of 43% among those treated with low grade commercial serum.

The most reliable results of this treatment are furnished by Cole.[24] In a series of 107 cases of this type, treated as outlined, the mortality was reduced to 7.5%. In the series at Camp Devens, during the influenza epidemic, noted in the preceding paragraph, the mortality of such cases treated with a high titre serum was reduced from 43 to 7%. In addition to these striking reductions in mortality, it is certain that the administration of serum causes the sterilization of the blood and a limitation of the spread of the process. It is unfortunate that there is not a corresponding reduction in the number of complications.

The specific treatment of Type II pneumonia is still in the experimental stage. Cecil[26] reports favorable results. In a small series at Camp Devens, the results were encouraging. Personal experience and the review of literature reveals insufficient data to warrant further discussion of this method of treatment.

CONCLUSIONS.

1. Thirty per cent. of cases of acute lobar pneumonia are due to Type I organism.
2. An immediate diagnosis of type is essential for the early administration of specific sera.
3. The use of polyvalent sera is irrational and unjustified.
4. Careful use of Type I serum in Type I pneumonia is safe.
5. It has reduced the spread of the disease process and the mortality to a sufficient extent to indicate its universal application.

TABLE I.

	Total Cases	Type I	Type II	Type III	Type IV
Lamb[9]	104	41%	30%	8%	21%
McClellan[10] ..	311	11.8%	18.7%	4.1%	65.2%
Alexander[11] ..	104	24%	21.2%	11.6%	43.2%
Hart[12]	96	27%	25%	8%	19%
Camac[13]	81	32%	22%	13%	33%
Kolmer[14]	500	33%	33%	13%	20%
Nichols[15]	150	56%	22%	27%	20%
Cole[16]	223	35%	34%	10%	21%
McClelland[17] .	113	29.2%	9.7%	4.4%	56.7%
Richardson[16] .	195	31%	26%	7%	42%
Spooner[22]	1103	25%	12%	14%	49%
Average ..	2980	29%	21%	11%	39%

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Book Reviews.

Studies from the Rockefeller Institute for Medical Research. Volume XXXI.

The Rockefeller Institute for Medical Research has published in Volume XXXI results of investigations conducted at the Rockefeller Institute. Among these reports there are a number which merit especial attention. Dr. Noguchi has contributed three interesting articles, in the first of which he considers the results of his further study on the cultural conditions of leptospira (spirochaeta) icterohaemorrhagiae; in the second he discusses the question of the survival of leptospira icterohaemorrhagiae in nature, and reports his observations concerning microchemical reactions and intermediary hosts. In his third article, "A homohemolytic system for the serum diagnosis of syphilis," Dr. Noguchi has described the principle of the method, the mode of utilization of human complement for the serodiagnosis of syphilis, varieties of irregular reactions and their adjustment, and the practical application of the test.

Two papers have been contributed by Dr. Simon Flexner, Dr. Harold Amoss, and Dr. Frederick Eberson. The first, "Physiological stimulation of the choroid plexus and experimental poliomyelitis," by Flexner, Amoss, and Eberson, supports the theory of the stimulating effect of intravenous injections of extracts of choroid plexus in the secretions of the cerebrospinal fluid. The second paper, by Flexner and Amoss, considers the passage of neutralizing substance from the blood into the cerebrospinal fluid in actively immunized monkeys.

The reports of Jacques Loeb, M.D., are valuable contributions to experimental biology. The first describes the stoichiometrical character of the action of neutral salts upon the swelling of gelatine; in the second, he illustrates the law controlling the quantity and rate of regeneration. His other studies include "The influence of neutral salts upon the viscosity of gelatine solutions," "The influence of neutral salts, bases, and acids on the precipitability of gelatin by alcohol," and "The origin of the conception of physiologically balanced salt solutions."

Of interest from the point of view of animal pathology is "Coccidiosis in Young Calves," by Dr. Theobald Smith and Dr. W. H. Graybill, who discuss the general characters of the disease and its pathology, and cite brief notes on individual cases.

In addition to these articles, this volume contains many other studies of value to medical research.

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Cerebrospinal Fluid. By ABRAHAM LEVINSON, B.S., M.D. St. Louis: C. B. Mosby Company. 1919.

The publication of this volume, "Cerebrospinal Fluid," has added to medical literature a book of unusual and timely interest. The study of body fluids, particularly of cerebrospinal fluids, has proved in recent years to be of great value in the diagnosis of many diseases and in the determination of physiologic and pathologic processes in the body. In this book the character of the cerebrospinal fluid is considered in health and in disease. The author has presented the theories of a number of investigators on the function and origin of this fluid. Of great practical value is the discussion of technic in obtaining the fluid and in examining it after it has been withdrawn. A chapter on lumbar and cranial puncture, illustrated by tables and plates, describes in careful detail the methods of procedure and the dangers to be guarded against. The changes which occur in the cerebrospinal fluid in various diseases,—such as uremia, diabetes mellitus, epilepsy, lues, psychoses, encephalitis, meningism, and poliomyelitis,—are considered as significant for diagnostic purposes and as showing their relation to the clinical manifestations of the disease. The methods of treatment which are described include those definitely established and those still in the experimental stage. In order to promote further scientific research on this subject, the author has suggested a number of lines of investigation which should be helpful in solving some of the contested problems of medicine. The book is excellently illustrated by plates, some of which are colored, and by tables.

THE BOSTON

Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SUGRICAL JOURNAL SOCIETY, INC.

THURSDAY, FEBRUARY 26, 1920

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish free to the author, upon his written request, one hundred eight-page reprints without covers, or the equivalent in pages in the case of articles of greater length.

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THE BOSTON MEDICAL AND SURGICAL JOURNAL.
126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

INVESTIGATION OF FACTORIES AT NIAGARA FALLS.

IN many forms of occupation the worker is surrounded not only by imminent danger of accident, but also by an atmosphere detrimental, often fatal, to his health and well-being. The Public Health Service has investigated conditions in a number of factories in the United States, and has disclosed dangers and instituted remediable measures. A recent investigation of conditions at Niagara Falls, in a factory engaged in the manufacture of abrasives, chemicals, gases, electrodes, carbons, metals, and alloys, disclosed the fact that over two hundred million tiny particles of dust, as sharp as ground glass, are breathed into the lungs and air passages with every cubit foot of air. These dusts are shown by photomicrographs to be exceedingly sharp and jagged; they are never expelled from the lungs, and are practically insoluble. Work under such conditions is conducive to respiratory diseases and involves a real health hazard.

The investigation conducted at Niagara Falls made evident the fact that in all of the factories the laborers were exposed to dangers which eventually would incapacitate them for further service. From the point of view of good health, it is fortunate that over sixty per cent. of the laborers in these factories seek new employment monthly, with the result that they suffer less from their temporary exposure than do those who remain at the same work for longer periods. As a result of the industrial survey, means have been devised for removing the dust from the air and minimizing the hazards from fumes and poisonous gases. It is encouraging to know that although the installation of such devices is expensive, they have been put into immediate use by factory managements.

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REGULATIONS FOR THE RESTRICTION OF RATS.

THE vigilance with which our ports are guarded against the introduction of plague by means of infected rats is a matter of serious concern to health officials and the general population. In pursuance of his duty to make investigation of all causes of sickness in the city or on vessels within the harbor and to make regulations to prevent the importation of disease, the Health Commissioner of Boston had promulgated recently the following regulations, with a view to the prevention of the introduction of plague into Boston:

1. The owner, agent, master and consignee of any vessel which is laying at any wharf within the limits of the City of Boston shall take such measures as may be necessary to prevent, and shall prevent any garbage, offal or other refuse which may furnish food for rats from being thrown overboard from such vessel or from being deposited on or about any wharf, except in rat-proof covered metallic receptacles, and shall take such measures as may be necessary to keep such receptacles covered and cared for, at all times, so as to prevent rats from gaining access to their contents.

2. No owner, agent, master, or consignee of any vessel, nor the owner, agent, or superintendent of any wharf shall deposit or store, or permit to be deposited or stored, or to accumulate, on or about any wharf, or in or about any building adjacent thereto, subject to his control, any foodstuff, refuse or other material, in such manner as to furnish a food supply or breeding place for rats, or otherwise than may

in any instance be prescribed by the Health Commissioner or his legal representative; and the owner of every wharf shall make provision, subject to the approval of the Health Commissioner, for the prompt and regular removal of all garbage, offal or other refuse from the wharf and land or premises adjacent thereto under his control.

3. In case any vessel shall arrive at the port of Boston from a port regarded by the United States Public Health Service as infected or possibly infected with the plague, and shall be permitted by the United States quarantine officials to come to a wharf in the City of Boston under a conditional practique for the purpose of discharging or taking on passengers or cargo, the master of such vessel, and the owner, agent, and superintendent of any wharf at which such vessel may lie, shall observe the following conditions:

The vessel shall be kept breasted off at least seven feet from the cap sill of the wharf.

All lines leading from the vessel to the shore shall be so guarded by effective rat guards or other devices as to prevent rats from reaching the shore by means of such lines. All freight gangways leading from the vessel to the wharf or shore shall be removed and kept down when not actually being used for the loading or discharge of cargo. Passenger gangways shall be removed when not kept constantly lighted and guarded so as effectually to prevent rats from reaching the shore by this means.

If it shall come to the knowledge of the owner or superintendent of the wharf or to the master or chief officer of a vessel that rats are reaching the shore in cargo that is being unloaded he shall immediately report the fact to the Health Commissioner of the City of Boston, and the owner or superintendent of the wharf and the master and chief officer of the vessel shall make such arrangements with the employees under their control and with the United States Customs Officers as will insure the prompt reporting to the said owner, agent, master or chief officer of the fact that rats are so being brought ashore with the cargo.

The maximum penalty for violation of any regulation promulgated under Section 65, Chapter 75, of the Revised Laws, is $100.

The enforcement of the above regulations will be an important factor in controlling the introduction of bubonic infections. There still remains to be considered, however, the problem of eliminating rats already infesting the city. In this connection the suggestions of a representative of the Woman's Municipal League of Boston merit consideration. The rats already swarming about our wharves are a continual menace to the health of the people, and will continue to be an active source of danger until they are eliminated by the destruction of their nesting places and the removal of their food supplies. In order to accomplish this, the League has suggested the following regulations: that plank walks and plank area coverings be prohibited; that rubbish shall not be allowed to accumulate in yards or other places, and that where it is necessary to store loose materials it shall be piled on platforms two feet above the ground; that all basement windows and other basement openings shall be screened or otherwise made rat-proof, and that bulkheads be kept closed except when in actual use; that stables shall be provided with metal-lined bins within the area walls for the storage of manure, such bins to be properly vented; that all garbage shall be placed in water-tight metal receptacles with close fitting metal covers; that all food products kept for sale shall be so protected as to prevent rats from gaining access thereto and coming in contact therewith; that all table feed, excepting hay, shall be kept in metal-lined bins so constructed as to be rat-proof; and that proper handling of grains, poultry, and food products at freight terminals and in transit through city streets be so accomplished as to prevent the attraction of rats.

In addition to these suggestions, the Woman's Municipal League has advocated a return to the practice of the laboratory examination of rat bodies in order to determine whether or not the rats trapped by officials are infected. It is hoped that these proposed regulations and suggestions for checking the introduction and spread of disease by infected rats will prove to be effective in eliminating a serious menace to the population.

MEDICAL NOTES.

RESULTS OF SMALLPOX VACCINATION IN FRANCE.—The report of Dr. A. Fasquelles, director of the Service Anti-variolique de l'Armée, which has been submitted recently to the French Academy of Medicine, states the results of his work in protecting the French Army from smallpox during the war. He has made the following announcement:

"During the war of 1870-1871 more than 120,000 French soldiers were infected with smallpox, and more than 25,000 died. During the recent war only 12 cases occurred in the metropolitan French Army with only one death. This is the first time that a war has not been accompanied by a smallpox epidemic.

Appointment of Dr. Harold Pringle.—Announcement has been made of the appointment of Dr. Harold Pringle, lecturer on histology and assistant in the department of physiology in the University of Edinburgh, to the professorship of physiology in Trinity College, Dublin, to succeed the late Sir Henry Thompson.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending January 31, 1920, the number of deaths reported was 306 against 291 last year, with a rate of 19.74 against 19.05 last year. There were 54 deaths under one year of age against 31 last year.

The number of cases of principal reportable diseases were: Diphtheria, 37; scarlet fever, 75; measles, 303; whooping cough, 90; tuberculosis, 40.

Included in the above were the following cases of non-residents: Diphtheria, 4; scarlet fever, 6; measles, 3; whooping cough, 3; tuberculosis, 3.

Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 4; measles, 3; whooping cough, 7; tuberculosis, 18.

Included in the above were the following non-residents: Diphtheria, 2; scarlet fever, 2; tuberculosis, 1.

Influenza cases, 1603; influenza deaths, 25.

During the week ending February 7, 1920, the number of deaths reported was 408 against 301 last year, with a rate of 26.32 against 19.71 last year. There were 41 deaths under one year of age against 46 last year.

The number of cases of principal reportable diseases were: Diphtheria, 47; scarlet fever, 54; measles, 277; whooping cough, 88; typhoid fever, 1; tuberculosis, 29.

Included in the above were the following cases of non-residents: Diphtheria, 13; scarlet fever 16; measles, 1; whooping cough, 2; typhoid fever, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 4; measles 6; whooping cough, 4; tuberculosis, 29.

Included in the above were the following non-residents: Diphtheria, 2; scarlet fever, 1; tuberculosis, 3.

Influenza cases, 2859; influenza deaths, 66. Deaths from pneumonia, both forms, 92.

Infantile Paralysis Fund.—It has been announced that further contributions for the Harvard Infantile Paralysis Commission Fund are greatly needed to insure treatment for the paralyzed children during the coming year. Only a third of the necessary amount has been raised. Contributions have been acknowledged to the amount of $5,361.87.

Extension of Hospital Facilities in Needham.—Funds are being raised for the proposed new Glover Home and Hospital in Needham. The present building, given to the town by the late Mr. F. P. Glover, has been used as a hospital since 1912 and is inadequate for the needs of the town; it will be remodeled and used as a Nurses' Home and will be connected with the new structure by a corridor.

The new building will be of brick, one story high, one hundred and eight feet long, with a basement above ground, a slate roof, and two sun parlors running the entire length on both sides. It will have twenty-five beds, an operating room, a diet kitchen, a contagious ward, and an x-ray room. The estimated cost of this building is $60,000, of which $40,000 has been raised already by popular subscription.

Harvard Medical Society.—At a recent meeting of the Harvard Medical Society, held in the amphitheatre of the Peter Bent Brigham Hospital, Dr. D. N. Eisendrath spoke on "Anomalies of Bile Ducts and Vessels," and Dr. E. E. Tyzzer discussed "The Parasite of Black Head" in turkeys, with observations on the transmission of the disease.

Promotion of Dr. Fleming.—Dr. Joseph P. Fleming, of Winthrop, has been promoted to the rank of captain in the Dental Reserve Corps. Dr. Fleming was commissioned a first lieutenant in the Dental Corps July 2, 1917. Later he was assigned to the 54th Infantry, 6th Division, with which he went overseas. He was discharged from active service August 7, 1919. Dr. Fleming was born in Roxbury 26 years ago. He was graduated from the Harvard Dental School in 1916. He is the son of Mr. and Mrs. J. P. Fleming, and is a member of Winthrop Post, American Legion.

VITAL STATISTICS IN MASSACHUSETTS.—The twenty-eighth annual report of the Secretary of the Commonwealth announces a decrease in the number of births and an increase in the number of deaths for the year 1918. The returns show a total of 95,607 births, a decrease of 124 over the previous year, and 78,842 deaths, an increase of 22,214.

HOSPITAL SALARY INCREASES.—It has been announced that increases in the salaries for the two superintendents of both the Boston City Hospital and the Long Island Hospital have been recommended to Mayor Peters by the boards of trustees of these institutions. The City Hospital trustees have noted approval of raising the salary of Dr. John J. Dowling from $5,000 to $7,500 a year. This is the first increase in the salary of this position which has been made during the last thirty years. The infirmary department trustees have approved of raising from $3,500 to $3,800 a year the salary of Dr. Charles E. Donlan, superintendent of the Long Island Hospital.

FITCHBURG MEDICAL SOCIETY.—At a meeting of the Fitchburg Medical Society held on February 8, the Society formally and unanimously recorded a protest against the enactment of the proposed "Mothers' Maternity Bill."

NEW ENGLAND NOTES.

WAR RELIEF FUNDS.—The New England branches of the principal war relief funds have received contributions to the following amounts:

French Wounded Fund for the American Hospital at Rheims	$2,991,619.14
French Orphanage Fund	552,972.27
Italian Fund	319,823.33
Fund for Devastated France ..	179,711.26

CONNECTICUT DEATH RATE.—The death rate in Connecticut for 1919 is said to be the lowest in that state since the year when vital statistics were first recorded. There was a total number of 18,228 deaths, a rate of 12.4 per one thousand of population.

There were 2929 deaths of children under one year, a death rate for infants of 87.2 per thousand. This also was the lowest rate on record among infants. The death rate for the preceding six years was: 1918, 19.4; 1917, 15.3; 1916, 15.6; 1915, 14.6; 1914, 15.1; 1913, 14.9.

Obituary.

SIR WILLIAM OSLER.

IN the death of Sir William Osler we mourn the loss of the most eminent and beloved physician of the present century. Born and educated during his early life in Canada and matured in this country and in England, Dr. Osler, through a long period of devoted service, had endeared himself to his colleagues, pupils, and friends on both sides of the Atlantic. It has been seldom in the history of medicine that a man has won so completely and deservedly the admiration, love and homage of those with whom he has been associated; his influence on medical science and on the lives of others will remain a lasting monument to his personality and achievement. For an excellent estimate of his character and charm we are indebted to Dr. F. H. Garrison:

> "Essentially English in character, Osler had, through his forebears, Cornish and Spanish elements in his composition, easily sensed in the "hauntings of Celtism" in his ringing eloquent voice, the suggestion of the hidalgo in his slender, aristocratic figure, the clean-cut features and the tropical brown eyes. His was the longish head of the man of action, the active practitioner against disease and pain. Osler's warm glance and utter friendliness of manner told how naturally fond he was of people. He had the gift of making almost anyone feel for the moment as if he were set apart as a valued particular friend, and so became, in effect, a kind of universal friend to patients, pupils, and colleagues alike."

William Osler was born at Bond Head, Ontario, on July 12, 1849, the sixth son of the Reverend Featherstone Lake Osler of Falmouth, England, and Ellen Free, daughter of Thomas Pickton of London. His father went to Canada as a missionary and became eventually the Rector of Ancaster and Dundas, Ontario. In his early life, Dr. Osler came under the influence of a parish priest, Father Johnson as he was called, the founder and warden of the Trinity College near Toronto. It was he who influenced the boy to buy "Religio Medici," the second book ever owned by Or. Osler, and it was to him and to two other teachers,—Dr. James Bouell of Toronto and Dr. Palmer Howard of Montreal,—that he dedicated his "Principles and Practice of Medicine," and to whom he was indebted for many of the subtle influences which helped to mould his character. When his early school days came to an end, Dr. Osler went to Trinity College of Medicine, and in 1870 to McGill University, Montreal, from which he was graduated in 1872. After brief visits to Dublin, Glasgow, and Edinburgh in the following summer, he spent fifteen months in the study of histology and physiology at the Physiological Laboratory, University College, with Professor Burdon-Sanderson. It was at this time that he observed the working out of the English system, the essential feature of which was the ward work done by the student; here he had opportunities of seeing William Jenner and Wilson Fox, and of learning the fascination of out-patient teachings from Ringer, Bastian, and Tilbury Fox. He spent the autumn of 1873 in Berlin, where he studied under Frerichs, Hoffman, Riess, Ewald, and Traube, and found a medical clinic on a large scale on which he later modelled his own clinic at Johns Hopkins Hospital. During the first five months of 1874 he studied in Vienna in the clinics of Hebra, Bamberger, and Widerhoffer.

Upon his return to Montreal in September, 1874, Dr. Osler was appointed to the Chair of the Institutes of Medicine, which involved the necessity of delivering four sytematic lectures a week for the winter session, a method of teaching of which he did not approve. In addition to his teaching, he became deeply interested in pathology, through his connection with the *post-mortem* department of the Montreal General Hospital. He received an appointment as physician to the small-pox wards of the Hospital in 1875, and in 1878 he was elected honorary physician to the hospital. He then went to London to become a member of the Royal College of Physicians and devoted himself chiefly to clinincal medicine. His own first clinical class was organized in the summer of 1879 and he spent the next five years in teaching physiology and pathology during the winter sessions and clinical medicine during the summer months. For four months in 1884 he stayed in Germany, chiefly at Leipsiz, studying pathology with Wiegert and clinical medicine with Wagner.

Sir William Osler's influence on medical education in this country began with his appointment in 1884 to the chair of clinical medicine in the University of Pennsylvania, Philadelphia, to succeed Dr. William Pepper. At this time he was, in his own words, quoted in the *British Medical Journal,* "a rich man, not in worldly goods, for such I have the misfortune —or the good fortune—lightly to esteem, but rich in the goods which neither rust nor moth have been able to corrupt—friendship, good fellowship, wide experience, and fuller knowledge." The next five years of his life were devoted primarily to teaching, giving his own life and experience as an inspiration to the students with whom he worked. At the University the teaching was conducted chiefly by lectures and the theatre clinic; there were ward classes for physical diagnosis, no clinical clerks, and a great number of theoretical lectures. Dr. Osler organized a small clinical laboratory,—a new departure in the method of teaching medicine at that time. After a period of five years, he was elected to the Chair of the Principles and Practice of Medicine in the Johns Hopkins University, Baltimore, and was appointed physician to the Johns Hopkins Hospital, where he assisted in the organization of the clinical work and teaching, establishing for the first time in this country the principle of hospital units, each in charge of a director. For several years, because of lack of funds, only post-graduate instruction could be given, for a medical school had not been opened. It was a source of great pride and satisfaction to Dr. Osler that he was able thus to assist in the organization of the hospital and in the introduction of English methods of practical instruction. He desired particularly to be known as one who had taught medical students in the wards. His ambition was to build up at Johns Hopkins a great clinic, conducted by a professor who should be assisted by an organized body of assistants and house-physicians, for the purpose of teaching medicine not by didactic lectures but in the wards and in the laboratory. The *British Medical Journal* makes the following statement in regard to his teaching:

> "Osler was an excellent clinical observer, and he attributed most of his success in this to his thorough grounding in the results of disease which he gained as pathologist at Montreal. He did a great deal of original work himself, and he had the happy faculty of inspiring others with his own enthusiasm for original investigation, and his charming personality and manner attached to him in the course of his life hundreds of young men who thought it a great honor and gain to them to be allowed to work

for or with him. He always gave proper credit for work done by others, whenever and wherever it was due, and never forgot his assistants."

Dr. Osler's professional ability as a teacher, his character, personality, and enthusiasm gained for him an international reputation. In 1904, when the office of Regius Professor of Medicine at Oxford became vacant, he was elected to the chair as a physician representative of medicine in its widest sense. His influence in Oxford may be estimated by the following statement by Dr. Charles Singer, quoted in the *British Medical Journal:*

> "Perhaps only those who have known the medical school at Oxford both before and after Osler's arrival can estimate fully the change wrought by his personality not only in the mechanism, but in the whole spirit. Among Osler's predecessors in the chair at Oxford have been men of the very highest scientific distinction, but few or none had that kind of knowledge which comes of a long life of clinical teaching and of a wide experience of a variety of medical schools. This was Osler's special asset, and it was associated in him with actual scientific attainments and humanistic sympathies that have probably not been found in combination to a like degree in any one medical teacher since the days of Boerhaave.
>
> "As soon as Osler came to Oxford he recognized the need of bringing the academic teaching of medicine there more fully into touch with the realities of practice. He not only threw all his weight into the adequate development of the departments of pathology and physiology, but he immediately discerned the need and the possibility of an extension there of clinical teaching. He saw that Oxford, a town of between 50,000 and 60,000 inhabitants, could not be a very great clinical school, but he knew from practical experience the special value that an academic atmosphere may give to clinical instruction and the value also that comes from an intensive study of material—a method either difficult or impossible in many busier centres. He thus succeeded in linking up scientific investigation and clinical experience. Nor will this method disappear with his direct influence, for he has inspired and left behind him a number of younger and distinguished exponents who will carry on his tradition."

At Oxford, Dr. Osler spent some of the happiest years of his life, engaged in activities which he loved amid surroundings in which he took great delight. His last years were greatly saddened by the loss of his only son, Lieutenant Revere Osler, an artillery officer and a youth of great promise, who died as a result of wounds received in action about Ypres in 1917. He bore his sorrow bravely, alleviating his own grief as far as he could by lightening the sorrows of others. After an illness of several months during the autumn of 1919, Dr. Osler died at his home in Norham Gardens on the afternoon of December 29. He is survived by his widow, Lady Osler, whom he married in 1892, the daughter of John Revere of Massachusetts and the great granddaughter of Paul Revere.

Of Dr. Osler's scientific work, Dr. F. H. Garrison has remarked that

> "No great physician has been more firmly grounded in the fundamental disciplines of his calling. Of the arduous years of post-mortem work at Montreal the Pathological Reports of the Montreal General Hospital (1876-80) are a permanent record, as also the eight editions of the great text-book on Practice of Medicine (1892), which has been translated into French, German, Spanish, and Chinese. The disciple of Morgagni and Virchow is equally apparent in the hundreds of clinical papers, the larger monographs in Osler's "Modern Medicine" (1907-10), the Gullstonian lectures on malignant endocarditis (1885), and the separate treatises on the cerebral palsies of children (1889), chorea (1894), abdominal tumors (1895), angina pectoris (1897), and cancer of the stomach (1900). From the start he did much original investigation of high quality. At the age of twenty-five (1874), he described the blood platelets associated with the name of Bizzozero, and defined their status as the third corpuscle of the blood and their relation to the formation of thrombi. Such early papers as those on the blood in pernicious anemia (1877), overstrain of the heart (1878), fusion of the semi-lunar valves (1880), reveal the born clinical and pathological observer. Osler was a profound student of all modes of aneurism, of tuberculosis, of typhoid fever, of disorders of the circulation. He was the first to emphasize the relation between mycotic aneurism and mycotic endocarditis, first described the ball-valve thrombus of the mitral orifice, the visceral complication of erythema multiforme (1895), chronic cyanosis with polycythemia, known as Vanquez' disease (1895), multiple telangiectasis (1901), the erythematous spots in malignant endocarditis (1908), and he discovered the parasite of verminous bronchitis in dogs (*filaria Osleri*, 1877). But to sense the magnitude of Osler's clinical work, it must be taken by and large in the 730 titles of the recently published Osler Bibliography (1919)."

Dr. Osler has received many honors both on this continent and in England in recognition of the value of his ideals and his service to humanity. At the time of the coronation of King George V he was made a baronet. He was honorary professor of medicine in Johns Hopkins University; he received the honorary degree of D. Sc. from the Universities of Oxford, Cambridge, Dublin, Liverpool, and Leeds, that of LL.D. from the University of McGill, Toronto, Aberdeen, Edinburgh, Yale, Harvard, and Johns Hopkins, and the title of D.C.L. was conferred upon him by the Universities of Durham and Trinity, Toronto. He was a foreign associate of the Academy of Medicine of Paris, and from the University of Christiania he received the honorary degree of M.D. On July 11, 1919, in honor of his seventieth birthday, there was presented to Dr. Osler, in the name of a large number of subscribers, a collection of essays in two volumes made up of contributions by approximately one hundred and fifty members of the profession on both sides of the Atlantic.

There have been few men in the history of medicine so universally and deservedly beloved as Sir William Osler. Dr. Thomas McCrae, Dr. Osler's successor at Johns Hopkins University, has characterized him as a "great physician, a wise counsellor, a true man, and, above all, a friend. Professionally he did much to advance knowledge, to improve medical education and to uphold the best traditions of a profession which he loved. A friend of young men, he never missed the opportunity to encourage and help them. How often he sent an approving word about an article or a good piece of work. As a teacher he did much to help medical education in this country and taught the lesson that the knowledge of disease is to be learned at the bedside rather than in the lecture room. A lover of books, he gave the first stimulus to many of an interest in literature, and especially in medical history. As a physician, he inspired confidence and gave courage to the sick with a constant example of kindness and consideration to those about him."

The British Medical Journal, in its issue of January 10, has published tributes to Sir William Osler from many of the University medical schools in the United Kingdom. Sir Clifford Allbutt, Regius Professor of Cambridge, has said of him:

"A quality which made Osler so fascinating a companion, his teaching so vivid and telling, and his parts in debate often so lively, was his wit and humor; the sharpness of the wit tempered by the sweetness of the humor. Indeed, much of his playfulness and whimsical mystifications were, in naturalist's phrase, a protective coloring to cover deep sensibilities.

"Osler's work for others was so incessant, and his hospitality so unbounded, that one always wondered when and where he amassed and made use of his learning; learning which, in particular, would discover itself, as it were, by accident, unless, indeed, his companions were expert enough to see it under the surface of his talk. Somehow or other, he put himself not only in sympathy with various subjects of study other than medicine, especially with literary pursuits, but he was able also to converse on something like equal terms with the masters of them."

Dr. G. S. Sherrington, F. R. S., Waynflete Professor of Physiology, Oxford, has remarked that "Among the characteristics which endeared Osler to his friends none was perhaps more striking than his combination of an intense affection for the past, and not least for the antique past, with an enthusiastic receptivity for the new, a sort of open-arms embracing of the future. To run his eye backward and forward along the historic continuity of Medicine seemed with him a daily and hourly habit, No man, I think, was ever less open to the misconception of the present as a moment apart, a thing that was stopping still to be looked into, and was intelligible by itself alone. Akin to his optimistic welcome of the new was his genial sympathy with the young; there was never a greater believer in the young generation than Osler, or a more generous encourager of it.

"Perhaps the most remarkable of his many gifts was that of rapidly making and then permanently retaining friendships. To see, speak to, and place at his ease as naturally his equal a young man, somewhat in awe of a famous leader of his profession, seemed an easy matter in his hands, and no doubt was the outcome of a wonderful sympathy that never failed, and at the same time was never obtrusive or other than natural in a very human man. This made him the same age as his companion, and indeed much as he loved old men, he delighted in meeting the young; with children he was a romping companion; to a mother in terrible distress for a son lost in the war the gentlest of comforters. There was no trace of the wall between the generations that the years so often build up, and probably few ever realized how strange this really was. His encouraging and stimulating attitude to young men made Oxford a Mecca to which there was a constant flow of pilgrims, especially from Canada and the United States, all certain of a welcome. Annoyance, irritability, or personal feeling of any kind was impossible to imagine in connection with his sunny temperament; that this was part of his philosophy of life is obvious in his charming address 'Aequanimitas,' and his attitude to his professional brethren finds expression in another address in the same volume on 'Unity, Peace and Concord.' Though a shrewd judge of character, neither his opinion nor the reason for it, if unfavorable, was given unless there was some urgent reason, and then the man's surroundings were blamed or a semi-humorous phrase settled the question without further affecting reputation; what he did not say in such circumstances was often very significant of his charity to poor human nature. There was a close resemblance between his personality and the written message conveyed in his charming addresses; the serious *motif* was always clear, but it was worked in with such a light hand that there was none of the solemnity or tedium almost inseparable from even a lay sermon. All his life he had been a lover of old authors and old books, Sir Thomas Browne being undoubtedly his favorite and his prototype in life's philosophy; thus it was that he did much to attract others to medical history and bibliography by weekly meetings during term at his house, at which the advances in medicine were sketched and early editions of the corresponding epoch-making works passed round. His literary style was epigrammatic, with apt illustrations, attractive from its classical flavor, and with the distinction conferred by his easily discernible personal touch. This was a feature of his popular textbook, so remarkable for its up-to-date picture of our science; a new edition was busily occupying his thoughts when his fatal illness began. His output was enormous, and it was a puzzle how, with innumerable engagements outside and an open house very rarely without its complement of visitors, he found time to read and work. To see him examine a case was a lesson in thorough clinical observation, and not least because the patient's interest was not forgotten in that of the case.

"To those who knew Osler well the simple lines written by Sorley about a V.C. who fell in the war, will not appear unsuitable:

> We know the glory that is his,
> The glory that can never die."

In the conduct of his life, Dr. Osler had three ideals, which he cherished and lived to the very end:

"To do the day's work well and not bother about tomorrow; to act on the Golden Rule towards his professional brethren and patients; and to cultivate a measure of equanimity to enable him to bear success with humility, affection of friends without pride, and to be ready when the day of sorrow and grief came to meet it with courage befitting a man."

SOCIETY NOTICES.

HARVARD MEDICAL SOCIETY.—A meeting will be held in the Peter Bent Brigham Hospital amphitheatre (Van Dyke Street entrance), Tuesday evening, March 2, at 8.15 o'clock.

PROGRAM

1. Dr. W. R. Sisson: The Effects of Feeding the Thymus Gland.
2. Dr. W. T. Bovie: Electrons and the Structure of Protoplasm.

Medical students and physicians are cordially invited to attend.

ELLIOTT C. CUTLER, *Secretary.*

NEW ENGLAND PEDIATRIC SOCIETY.—The sixty-second meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, March 12, 1920, at 8.15 P.M.

The following papers will be read:

1. Diabetes in Childhood. Elliott P. Joslin, M.D. Discussion opened by F. G. Brigham, M.D., and Horace Gray, M.D.
2. Medical Supervision of the Boarded-out Child, Maynard Ladd, M.D.
3. Are the Amounts of the Individual Mineral Elements Usually Fed in Modified Milk Formulas Sufficient?, Alfred W. Bosworth and Henry I. Bowditch, M.D.
   Discussion opened by W. R. Sisson, M.D.

FRITZ B. TALBOT, M.D., *President,*
LEWIS WEBB HILL, M.D., *Secretary.*

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BY BOAT TO THE NEW ORLEANS SESSION OF THE AMERICAN MEDICAL ASSOCIATION.

THE schedule of the Southern Pacific Steamboat Line announces a boat to leave New York on Saturday, April 24, and to arrive in New Orleans at 9 A.M. Wednesday, April 28. The boat will lie at the Canal Street Pier, New Orleans, until Saturday, May 1. Passengers may make arrangements so that they may occupy state rooms for the three days on which the sections meet. In this way, they will be assured of comfortable lodgings while at New Orleans.

The boats of this line are large, well-appointed steamers that ply regularly between New York and New Orleans as a part of the Southern Pacific system.

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DEATHS OF FELLOWS IN THE MASSACHUSETTS MEDICAL SOCIETY.

WALLACE MILES KNOWLTON, M.D., a graduate of the University of Vermont, Medical Department, in 1880 and a practitioner in Newton and Boston, died in Boston February 6, 1920.

ELMER ERNEST SOUTHARD, M.D., died of pneumonia in New York City, February 8, 1920, aged 43 years.

ERNEST HENRY NOYES, M.D., died at Newburyport, February 7, 1920, aged 66 years.

HARRY JOHN TATE, M.D., died at Pittsfield, February 11, 1920, aged 30 years.

FREDERICK JAMES RUSSELL, M.D., of Letchworth, Village, Thiells, New York, died in New York City December 21, 1919, aged 46 years.